

Work-Based Learning Implementation Model in Vocational Education

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Abstract

Vocational Education and Training (VET) in Indonesia shows significant progress in this recent 10 years. Better imaging of VET is influenced by some factors, such as policy shift of improving proportion of SMK students, intense imaging of SMK, improvement of vocational education on university level, establishment of National Competence Framework (KKNI) as well as national economic growth. By having this development, all stake holders of Technology and Vocational Education should always conserve this spirit. Reformulation of VET paradigm should be continually conducted in case of democratic society building, social capital development, and national competitiveness aspect. Those will related to policy development, curriculum restructuring, learning model improvement, program evaluation and professional development for teacher education as well as LPTK and DUDI partnership.

The strategy of learning development on VET implementation should always be conducted so that the graduates competence fulfilling market demand. The learning process on VET should apply Work Based Learning (WBL) approach and DUDI cooperation. In line with technology development, dynamic of working setting, working context challenge and higher working competence, VET is demanded to be able to anticipate and face this global challenge by utilizing capability and capacity of industrial partnership.

WBL is a learning approach that utilizes the work place and its experience to contribute to social context, academic, and learner carrier development as well as the supplement of learning activity. The experience of learning in the working area is applied, smoothed, and expanded either on class or work place. By implementing WBL, learners develop attitude, knowledge, skills, insight, behavior, habits, and associations from the experiences of both places and enabling learning process with real working context. Empirical study development of Ro-Ter model (*Rolling dan Terpadu*/Rolling and integrated) in vocational learning of Automotive Diploma III can be developed on VET implementation especially Automotive Engineering Education in LPTK.

Keywords: work-based learning, implementation model, Automotive Vocational Education

1. Introduction

Innovation on how education should be conducted has to be continuously carried out by the vocational education practitioners in order to achieve the competitive advantage to answer the challenge of high-quality education. Challenge in a working environment is changing rapidly due to the advance technology and the competition among the educational institutions themselves. This challenge demands that the vocational education institutions to adapt and utilize their capability in dealing with that challenge. In focusing as an agent of change, these vocational education institutions can utilize the sources they have and also utilize the partnership networking with the third party as accumulation of source in conducting the education. Innovation can be described as a process where management, professional staff and any other community in that

institution are flexible (Dyer & Singh, 1998). This condition is in line with the process of education held by the vocational educational practitioners where contextual base, which try to bridge the school education with the industrial field. Contextual teaching and learning (CTL) in vocational education is an approach that “connecting the content students are learning with the context in which they will be used. Connecting content with context is important in bringing meaning to the learning process (Bern & Erickson, 1998).

Developing the implementation of vocational education should always be conducted by its organizer in order to improve the graduates' quality in order to fulfill world market challenge. Its challenge and the working competences are always improved in the line of technology development. In

addition, the work place dynamic requires vocational education institution to be able to anticipate and to deal with the change by utilizing any existing capabilities. Various signals from the quality of education have been the problem background in managing of vocational education (for example in Automotive education S1 or Automotive Diploma III Study Program) by implementing Work Based Learning approach (WBL). WBL is a learning approach that utilizes the work place and its experience to contribute to social context, academic, and learner carrier development as well as the supplement of learning activity. Learning experience in work place is applied, smoothed, and enlarged on the learning process for both university and working place. By implementing WBL, the learners develop their attitude, knowledge, skill, insight, behavior, habits, and association from the experience of both places with enabling to create the learning process related to real-life work activities (Lynch & Harnish, 1998).

The quality of learning outcomes for Automotive education S1 Study Program (for example) either process or product is highly influenced by its learning method. It is difficult to conduct vocational education without having cooperation among the education institutions, business areas, and industrial areas. The theories of experiential learning, context teaching and learning and also work based learning become really relevant in managing vocational education. It requires the development model in managing vocational education by implementing those theories to improve the quality of learning result that will give impact on the quality of learning result and the graduates' competence. In managing vocational education based WBL, it needs some learning strategies and methods.

The current research findings suggest that the implementation of WBL in education had positive influence on achievement, motivation and continuing education process (Bailey & Merrit, 1997). Research and study evaluation show that there was a correlation between outputs and graduates' outcomes with the school learning model and industrial experience. When the program goal, curriculum and work based experience were arranged and implemented also accompanied with adequate staffs support as well as appropriate evaluation, those would give positive impact (Lynch & Harnish, 1998; Fallow & Weller, 2000; Braham & Pickering, 2007; Garnett, 2008).

The purpose of Automotive education S1 Study Program is to prepare teachers/personnel who fulfill the working area demand. It is interesting to have a study on various models of managing work based learning in industrial partnership context. The

development of WBL implementation on Automotive education S1 Study Program is investigated comprehensively to reveal its role in improving the quality of learning result and the graduates which cover (1) to find the model in managing WBL in Automotive Vocational Education, (2) to know the output of WBL implementation with the developed model toward the aspects of learning result quality, (3) to examine the factors that influence the quality of learning result in the implementation of WBL model, (4) to reveal the respond from the organizer of Automotive Vocational Education and the factory management toward the developed model.

2. Methods

The subject for testing the analysis of working effectiveness model was 50 students of WBL Ro-Ter participant as experimental group and 50 students of PI/PL/PKL participants as control group including the substitution of experimental mortality of 5% and using random sampling technique. The sample of experimental and control group represented the population of Automotive Diploma III Study Program in Yogyakarta region and Central Java which covered 3 state university organizers (UNY, UNS Surakarta, UNNES Semarang) and 3 private university organizers (Politeknik Muhammadiyah Yogyakarta, Politeknik Pratama, Solo, and UM Magelang). This research was conducted in Training Centre in Agen Pemegang Merek (APM) or Automotive Authorized Dealer Agency in Jakarta, Karawang, Tangerang and Bekasi by placing sample in a boarding and the practical area then rolling stage was implemented for each APM. This research was conducted in 7 months, 3 months (1 January – 08 April 2010) was for limited test and 4 months (1 July – 29 October 2010) was for model testing. The entire variable data were taken by inventory and analyzed with the assistance of SPSS 17 Program.

3. Findings

Two cycles of the research, i.e. (1) hypothesis validation model, and (2) application testing model. The first cycle, model validation of hypothesis was to examine the relationship between variable by implementing correlational test and double regression. The second cycle was testing the application model that covered (1) model effectiveness testing, (2) observation of a changing tendency in the participants' quality, (3) measuring the response of organizing management towards the implementation of Ro-Ter WBL Model. The relationship model of empirical causal among the variable was represented on Figure 1, t-test of inter group was concluded in

Table 1, and WBL Ro-Ter Implementation Model were shown Figure 2.

4. Discussion

Rolling and Integrated WBL Model/Ro-Ter WBL Model

The implementation of Ro-Ter WBL Model is a model application, planning, execution, monitoring & supervising and learning program evaluation based working context which is conducted by organizing management of vocational education Automotive Diploma III with working industrial partnership and working context. Ro-Ter WBL Model is development model from the current industrial practicum, the improvement itself covers, (1) expanding the duration, practicum period from 3 credits or one and a

half month or equivalent with 256 hours is added into 3 months or 90 days in 3 different places; (2) grouping implementation by placing in mess with the goal of unity, time and place efficiency and discipline training as well as teamwork; (3) rolling implementation, groups of student gain experience from 3 different places in order to obtain complete experience in automotive spectrum and also to give the students better understanding of any corporate culture in reflection process, abstraction & generalization; (4) integrated implementation, there is theoretical material provided on each location that is considered as credit and the material presenter is a qualified instructor from industrial spectrum while the material itself adjusted with industrial characteristic.

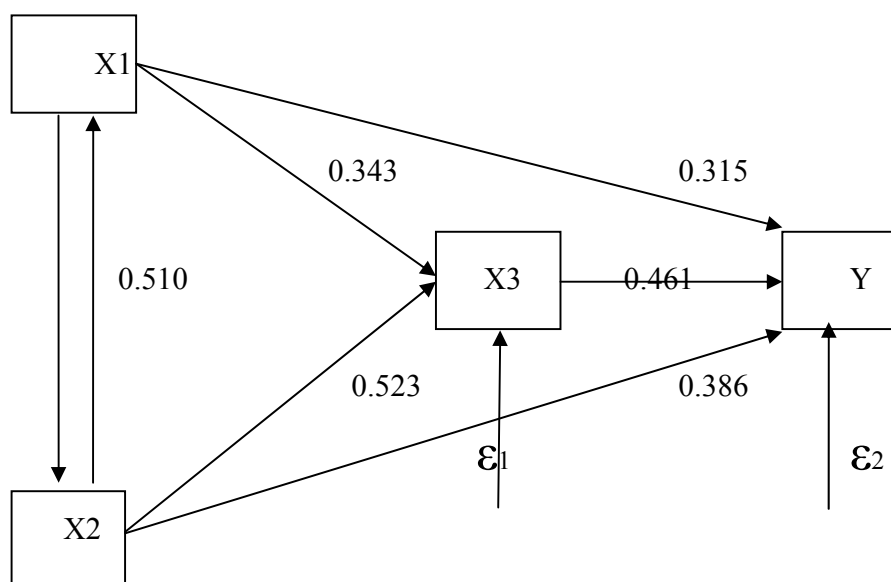


Figure 1. The final Model of Empiric Causal Variable

Explanation:

X1 : The working performance of management organizer (students' perception)

X2 : students' Organizational culture

X3 : The quality of WBL Learning

Y : The quality of WBL Learning result

Table 1. The summary of T-Test result of the entire variables from each group (significance of 0, 05)

Variabel	Observation1			Observation 2			Observation 3		
	F	Sig.	Conclusion	F	Sig.	Conclusion	F	Sig.	Conclusion
The working performance (X1)	.077	.046	Significant	.324	.001	Significant	.024	.000	Significant

students' Organizational culture (X2)	2.843	.105	Unsignificant	4.940	.004	Significant	2.675	.000	Significant
The quality of WBL Learning (X3)	.253	.013	Significant	1.974	.006	Significant	.175	.000	Significant
The quality of WBL Learning result (Y)	3.152	.093	Unsignificant	6.307	.275	Unsignificant	.693	.000	Significant
The Competence of the beginner of Automotive Engineer (Y1)	.757	.700	Unsignificant	.002	.885	Unsignificant	2.027	.000	Significant
Students' Profesional Attitude (Y2)	.364	.748	Unsignificant	.743	.469	Unsignificant	.010	.001	Significant
The Readiness of Work Mental ity (Y3)	1.112	.767	Unsignificant	4.558	.146	Unsignificant	1.623	.000	Significant
Students Autonomous/ Personality (Y4)	2.262	.036	Significant	2.606	.088	Unsignificant	.983	.000	Significant

Experimental test result showed that the implementation of Ro-Ter WBL Model had significant influence towards the quality of learning result which covered some aspects, such as beginner automotive mechanical knowledge, professional attitude, readiness of working mentality and students' autonomy. Experimental class had higher mean point for those variables compared with control class which implementing conventional apprentice method for its field practicum program.

In this recent period, industrial or field practicum puts more emphasis only on cognitive and skill aspect. Meanwhile, by implementing WBL method, affective, working readiness, and autonomy aspects were significantly improved. Progress also happen in other aspects which influence learning result quality as well, i.e. working performance of organizer management (based on students' perception), WBL learning quality, and students' organizational culture. This result showed that Ro-Ter WBL Model was effective to improve the learning quality. It has

similar implication with some studies about the implementation of work based learning in some countries at some schools and colleges (Bragg, 1995; Rezin&McCaslin, 2001; MallikaModrakee, 2005).

The response of organizing management towards the implementation of Ro-Ter WBL Model is also categorized as high. It means acceptability level for this model to be applied on their training center was good. High category was also obtained on their perception toward Ro-Ter WBL model, WBL program, and soft skills which should be trained in this model. By adding the duration of industrial experience into 3 months and applying 3 places rolling, the learning process has better-quality, students' perception toward organizer working performance is higher, and students' organizing culture is improved and at last the learning result increased significantly. The students obtain better tutoring either individually or group. Besides, the students attain longer-term experience and it makes the students have

deeper reflection, generalization & abstraction, and transfer in experiential learning. In this model, the learning experience is so complete such as, togetherness in daily life (in dormitory or mess), mentoring (group or individual), autonomous learning (making productive training program supervised by an industrial mentor), adequate training facility (in training center) and a conducive atmosphere for studying (working environment, time discipline, teamwork, clear learning target)

The result findings will be appropriate to be applied in APM which has complete training Centre, such as adequate mess with high discipline regulation, well-organized CSR program, human resource management standard, and complete facility. However, essentially, this model can be applied to some APM workshop in rural areas which has no dormitory or mess. Generally, the workshops of APM in rural area have applied after-sales service standard, such as selling, service, and spare part. There is no big difference among the standard of workshop/service after-sales or the facility between the center workshops and workshop in rural area. In addition, in rural area, they already had standard and continual mechanical quality control, well-procedure operation standard, broad networking, and well-established corporate culture. Although Ro-Ter WBL Model have not covered all automotive spectrum (only light vehicle engineering, auto body engineering, and autotronic engineering), the researcher believes that this model can be applied to two other spectrums. By having participation from various APM in broad spectrum, Ro-Ter WBL Model has a great chance to be applied and the students' competence combination will be more complete, if there are various APM getting involved. The combination of three of five automotive spectrums will give interesting point to be applied in various implementations.

The efforts of improving management performance for the organizer cannot be separated from the description of the components and its arranged indicators. Based on the propensity score, each indicator and the arrangement items, some strategic attempts need to be done according to the priority, i.e. (1) improving management performance for the organizer especially on professionalism development, guidance, mentoring, monitoring, evaluation, (2) improving the performance in managing the additional tasks by giving chance

to have a big role in any other activities, (3) improving the ability on lesson planning in accordance with the agreed curriculum, (4) improving the ability in implementing the learning process related to learning method, media or learning evaluation.

In this study, management performance of the organizer was also assessed from the observation of their respond toward WBL model. The result of descriptive analysis showed the same tendency to self-assessment such as, overall, management performance of the organizer categorized as high level which was indicated from the high score of the performance in acting and evaluating the learning process, lesson planning and conducting the duties beyond the main ones. Meanwhile, the aspect of professionalism development needed to give more attention due to its low score.

The result of descriptive analysis showed that the students' organizational culture, consisted of school culture and corporate culture, classified as moderate level with the percentage of 58.50%. In the line with the definition of school culture as well as university culture, it can be referred to values, faith, norm, thinking style of school/ university member (Owen, 1991: 79), system of shared meaning of the school member (Robbins, 2006: 72) or deep meaning of value, faith, school tradition which was formed by the time process (Paterson, 1990:122) in general categorized as moderate level. That score hadnot fulfilled good level standard yet and it was far below the maximum point (100%), therefore, both cultures, school and corporate, needed to be developed to achieve the maximum point.

The effort in improving school/university culture, such as (1) improving the students togetherness through several programs and activities so that the students have the sense of belonging and supporting one another, (2) improving the affiliation between the students and campus society in order to create comfortable atmosphere in accomplish the department goal, (3) improving the academic atmosphere so that the students can fulfill their needs by developing ability professionally, (4) improving professional collaboration between students and campus society through deliberation, brainstorming, discussion and finishing the tasks with the lecturers. Based on analysis descriptive, it can be formulated that overall, students organization categorized as moderate level which was supported by the

score of professional collaboration, efficacy of self-determination, and afflictive relationship. Meanwhile, collegial relationship aspect needed to be put on the highest priority to be solved.

Statistical analysis showed that the quality of WBL learning became the main determining factor of WBL learning result for WBL Ro-Ter model. In same line, Arie Senduperdana in his research found that there was positive and significant relationship between the quality of learning and the students' learning result. 21 % of the students learning result can be predicted from the quality of learning (Arie Senduperdana, 2007:31). The research conducted by S. Eko Petro W. (2008:279) showed that 64% of learning output in social sciences influenced by its previous learning process. Therefore, to improve learning output, it should be preceded by developing the learning quality which had been conducted. For the sake of developing the quality of learning, the improvement of learning input should be conducted at the beginning.

Meanwhile, Mallika Modrakee (2005) in her Doctor's Dissertation in University of Victoria Australia entitled *Vocational Education Development in a Work Based Learning Programme* in Aksorn School of Technology Pattaya, Thailand found that, historically, the main point of vocational education was school based education. It gave emphasis on teacher-centered learning which less experience in working context. Therefore, it made the students are lack of preparation and not ready to take part in working environment. This study implemented WBL to give better preparation to the students and gave contextual experience through job placement. By providing culture and working experience in the broader working place, conducting skills and competence practicing suited with working context. Based

on Cohort study with 10 students for 3 months in 2 cycles by implementing observation, interview and data collection, it showed that WBL program was potential to solve any problems in carrier development. Then, WBL became the key point for the students in making a decision involving working practices and contributed to the development of the stakeholders in case of professional importance.

CFA results of the data quality of WBL learning outcomes found that the hypothesis of the construct model for learning quality outcomes was match to the model obtained from the field. Determinant coefficient of indicator towards the lowest dimension was 11.90% and the highest was 25.50; each indicator was the coefficient determinant of the quality of student learning outcomes in the WBL program. The result of different Test from each group and each treatment showed that the implementation of WBL Ro-Ter program can improve the quality of learning outcomes in both competence aspects of automotive mechanic and other aspects such as professional attitudes of the students, working readiness, and independence / student personality.

The analysis results showed that the direct influence of organizational culture on the quality of learning outcomes was very significant, and the indirect one through the implementation of WBL model was also significant. It suggests that the ability of the students and work-based learning adaptation had a meaning in describing the influence of organizational culture and management performance of WBL organizer program towards the quality of learning outcomes. Better organizational culture will give positive impact on the quality of student learning outcomes and determining the high quality of graduates at last.

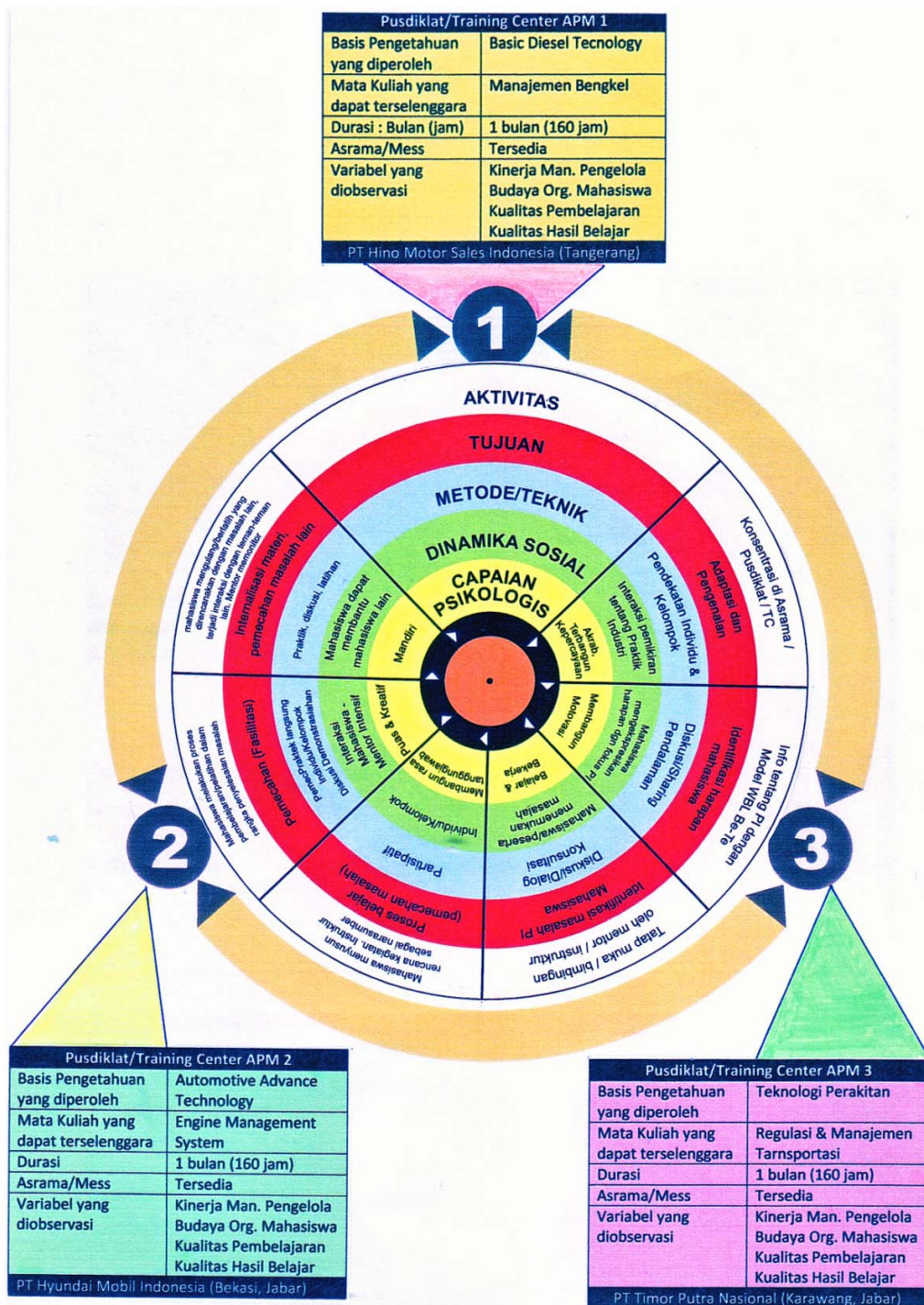


Figure 2. WBL Ro-Ter Implementation Model

5. Conclusion

1. Based on the results of testing and development, the implementation model of Rolling and integrated WBL (Ro-Ter) in automotive vocational education found it significant to improve the quality of student learning outcomes covering aspects of automotive mechanic competence, professional attitude, working preparation mental, and autonomy/ students personality.
2. The results of descriptive analysis showed that these aspects of quality learning in WBL categorized as high. Student cultural organizations, management performance of WBL organizer, the quality of WBL learning, were the important factor for the quality of student learning outcomes on WBL program.
3. The success of WBL Ro-Ter implementation was proved by the higher automotive engineer competence, better professionalism attitude, job mental readiness was more established, the autonomy/ personality of the students was significantly better than the conventional classroom model over the years, the testing results of WBL Ro-Ter model met the requirements of Research and Development included accuracy, realistic, and in terms of benefits. Validity and reliability of the instrument, the requirements of the respondent, the grouping of experimental and control class, documentation, had fulfilled other research requirements.

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